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A typology of multiple exclusion homelessness

Edith England[a,b], Ian Thomas[c], Peter Mackie[b] and Hannah Browne-Gott[b]

[a]School of Geography and Planning, Cardiff University, Cardiff, Wales; [b]School of Education and Social Policy, Cardiff Metropolitan University, Cardiff, United Kingdom; [c]Wales Institute of Social and Economic Research and Data, Cardiff, United Kingdom

ABSTRACT

Quantitative exploration of sub-groups of people experiencing homelessness facing similar challenges, or multiple exclusion homelessness (MEH), is limited in Great Britain—as is discussion of what these groupings mean for policy and practice. Through secondary analysis of survey data from a study of single people experiencing homelessness in England, Scotland, and Wales, this paper aims to advance understanding of MEH. Using Latent Class Analysis, we explore several possible typologies of MEH before outlining a preferred typology composed of four groups: those facing high exclusion; those faced with low levels of exclusion; and two intermediate groups, one marked by trauma and mental ill-health, the other by offending and substance dependencies. When compared to international studies on MEH, findings point toward possible common combinations of exclusion amongst people experiencing homelessness drawn from different populations. The emergent policy and practice implications of this analysis demonstrate the value of scrutinising homelessness policy and practice internationally through a lens of MEH.

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Multiple exclusion homelessness; adversity; Great Britain; policy; single people

Introduction

The adverse life experiences of people experiencing homelessness (PEH) are well documented in a canon of global homelessness research, with studies commonly pointing to episodes of violence or abuse, substance misuse issues, physical and mental health problems, periods spent in institutional care, and adversity during childhood (Shelton *et al.*, 2012; Tischler *et al.*, 2007). Furthermore, a growing evidence base explores the intersection between homelessness and multiple adverse life events, producing 'multiple exclusion homelessness' (MEH) (Bramley *et al.* 2015; Fitzpatrick *et al.*, 2013; Shelton *et al.*, 2012; Tsai *et al.*, 2013). A better understanding of sub-groupings of MEH can help inform efforts to both prevent homelessness in the first instance, and to expedite exits from homelessness when it cannot be

CONTACT Ian Thomas ThomasIR2@cardiff.ac.uk Data and Methods (WISERD), Wales Institute of Social and Economic Research and Data, Cardiff, United Kingdom.

avoided. However, MEH remains under-researched in the United Kingdom, with only one large scale quantitative study having been undertaken (Fitzpatrick *et al.*, 2011). This paper has the explicit goal of adding to the quantitative evidence base on MEH in Great Britain (GB), and in considering the implications of MEH for homelessness policy and practice, both in GB and internationally. More specifically, the research addresses three research questions:

1. To what extent are there recurrent combinations of adverse experiences amongst people experiencing homelessness in different international contexts?
2. What are the common groupings of multiple exclusion amongst people experiencing homelessness in Great Britain and to what extent do these align with different international contexts?
3. What are the main policy implications emerging from an advanced understanding of multiple exclusion homelessness in Great Britain?

The paper begins with an overview of contemporary policies relevant to MEH in Great Britain. This is followed by a review of key literature on how a core set of adverse life experiences (including ill-health, substance use, certain traumatic life-events and institutional interactions) affect PEH, particularly by increasing the risk of, and complicating, homelessness. We then explore the interaction of these experiences, drawing on international studies which have identified sub-groups within homeless populations who share similar experiences. This international review of MEH enables us to respond to our first research question, positing that there are recurrent combinations of adverse experiences. The paper then describes the research methodology, including an overview of the GB survey data and the Latent Class Analysis used to identify common groupings of MEH. The results of Latent Class Analysis are then presented – from which we respond to the second research question and identify four groups of single PEH in GB. The penultimate section of the paper addresses the final research question; it situates the research findings in the context of existing MEH studies and considers policy implications. The paper ends with a brief conclusion identifying the study's key contributions.

Policy responses to multiple exclusion homelessness in Great Britain

This brief section contextualises the study within key contemporary policy directions relevant to MEH. Three trends are particularly important. First, there is a slow shift towards more housing-led responses that are proven to more effectively meet the needs of people facing MEH (e.g. Housing First). Second, services are being designed in person-centred and trauma-informed ways. Third, interventions are moving upstream in an effort to prevent homelessness and its harms.

Housing-led responses to homelessness are slowly emerging as a policy priority across all three GB nations, marking a major departure from the status quo. Since the commencement of the Housing (Homeless Persons) Act 1977, local authorities across GB have had statutory duties to rehouse homeless vulnerable adults and families with children. Households are provided temporary accommodation, where stays can often last many months or years (Thomas & Mackie, 2021), until settled accommodation can be found. It is only in Scotland that this duty is owed to all homeless households; in England and Wales most single adults are not likely to meet priority need criterion and therefore no right to temporary or settled accommodation exists. However, the COVID-19 pandemic prompted a temporary extension of priority need groups to include single homeless households in England and Wales and Welsh Government has committed to retain this important change. Within these different legislative contexts, all three GB nations have, to varying degrees, committed to move towards housing-led responses, whereby people are far more quickly offered settled accommodation. More specifically, there have been policy and funding commitments to deliver Housing First for people experiencing multiple and complex needs. Housing First is perhaps the best evidenced homelessness intervention globally and is premised on swift access to settled accommodation, wraparound support, and no pre-conditions of housing readiness. In England, there has been an almost six-fold increase in the capacity of Housing First services across the country between 2017 and 2020 (Homeless Link, 2020), in Scotland by May 2021 more than 500 people had been housed through Housing First (Housing First Scotland, 2021); and in Wales the government states that Housing First should be the default approach for those with very complex needs and has invested in at least 10 pilot projects (Welsh Government, 2019).

Scottish and Welsh Governments have also made commitments to more person-centred and trauma informed homelessness services that take into account the multiple adverse events people have often experienced. For example, the Housing and Social Justice Directorate of Scottish Government (2020: 14) states; 'we know that to be most effective, services should be trauma-informed, person-centred and tailored to reflect individual needs and circumstances. This means understanding the ways in which adverse and traumatic experiences in childhood and later life contribute to homelessness.' In Scotland this manifested in a National Trauma Training Programme across the public sector workforce and similarly in Wales, psychologically informed environments training has been delivered across the housing and homelessness sector. Whilst guidance and training exist in England, there has been no national roll-out.

Homelessness policy across GB is moving upstream, focused on prevention and the avoidance of harm (Fitzpatrick *et al.*, 2021; Mackie *et al.*, 2017; England & Taylor, 2021). The Housing (Wales) Act 2014 introduced a major change to the homelessness legislative framework in Wales, placing a new duty on local authorities to take reasonable steps to prevent homelessness with all eligible households. In England, the Homelessness Reduction Act (2017) largely replicates these changes and Scottish Government, learning and expanding on developments across the rest of GB, has committed to a new duty on local authorities, public bodies and delivery partners for the prevention of homelessness. Legislation in England and Wales has enabled many households to retain or quickly find alternative accommodation, yet services remain crisis focused (e.g. when an eviction notice is issued). Some targeted, earlier interventions are in place with prison leavers at risk of homelessness in all three GB nations and this is particularly relevant to MEH homelessness. Protocols, guidance or standards in the three nations set out expectations of prisons, probation services and local authorities around the prevention of homelessness at key stages of a person's journey through the secure estate. These include; the SHORE standards in Scotland, the National Pathway for Homelessness Services to Children, Young People and Adults in the Secure Estate in Wales, and in England there is a duty on prisons and probation services to refer anyone who is homeless or at risk of becoming homeless to the local authority. Evidence on the effectiveness of these more targeted prevention policies is currently limited - a review of the pathway in Wales was inconclusive as to whether more or fewer prison leavers were being released as homeless (Madoc-Jones *et al.*, 2018).

In our discussion we return to these key policy directions and consider the extent to which they address the needs of different sub-groups of MEH in GB. The next section presents a review of key international literatures on MEH and responds to the first research question; to what extent are there recurrent combinations of adverse experiences amongst people experiencing homelessness in different international contexts?

Homelessness and adverse life experiences

Seminal work by Bramley & Fitzpatrick (2018) establishes that the primary causal mechanism of homelessness in the UK is poverty, and to a lesser extent housing market pressures. These structural adversities are omnipresent within otherwise diverse experiences of homelessness. We forefront this important point to avoid pathologizing homeless experiences (O'Sullivan *et al.*, 2020) – a risk we are very conscious of given our focus on identifying and considering the implications of combinations of adversities that relate primarily to the person. These adversities can broadly be split into three common threads: health issues and substance misuse; traumatic life events; and institutional interactions. We discuss each of these areas in turn, before focusing on their overlap and grouping, or MEH.

Health and substance misuse

Homelessness is physically and mentally demanding (Deck & Platt, 2015; Goodman *et al.*, 1991), and mortality among homeless populations is well-established as greater than the general (housed) populous (Fazel *et al.*, 2014). In England and Wales, analysis of death records for rough sleepers has found that the leading cause of mortality is related to three factors: drug related deaths; suicide; and liver diseases. This suggests that drug and alcohol use, and mental ill-health, are factors contributing to increased mortality amongst this population. However, there is great heterogeneity in the prevalence of health and substance misuse issues. For example, a meta-analysis pooling published studies on homeless populations in Europe and North America conducted by Fazel *et al.* (2008), found that alcohol dependence ranged from 8.1% to 58.5%, and drug dependence ranged from 4.5% to 54.2%. Sosenko *et al.*'s (2020) recent study is particularly important in demonstrating gendered patterns of severe and multiple disadvantage; whilst only a proprotion of the study population had experienced homelessness, a key finding is the significance of mental ill-health in women's experiences of multiple exclusion.

Early and adult trauma

Those who have experienced early traumatic incidents, including emotional, physical, and sexual abuse, neglect, parental mental ill-health and/or substance abuse, are all at particular risk of entrenched, complex, homelessness in adulthood (Curry *et al.*, 2017; Edalati & Nicholls, 2019; Larkin & Park, 2012). Evidence from Wales illustrates that young people who experience four or more adverse experiences in childhood are 16 times more likely to report experiencing homelessness at some point in their adult life, compared to those who have not experienced adversities (Grey & Woodfine, 2019). Adversities with the strongest associations with homelessness were related to neglect and abuse—both physical and sexual (Grey & Woodfine, 2019:12). Fitzpatrick *et al.*'s (2013:156) analysis of pathways into homelessness in Great Britain found a similar pattern; that there were 'consistent positive associations' between the complexity of a persons' homelessness and early traumatic experiences. School exclusion is also a consistent predictor of later housing insecurity (Shelton *et al.*, 2012). Finally, experiencing domestic violence is a strong predictor of homelessness, particularly where services are unsuitable or inadequate for the local population, and this again disproportionately impacts upon women (Bretherton, 2017; Mayock *et al.*, 2016; Sosenko *et al.*, 2020).

Institutional interactions

Institutional interactions are often risk factors for homelessness, including: leaving prison, the armed forces, and periods in social care. Regression analysis of longitudinal survey data in Great Britain has found that having ever been in care before the age of 16 meant a 1.9 increase in the odds of becoming homeless between the ages of 16 and 30 years old than those who had not been in care (Bramley & Fitzpatrick, 2018). Drawing on cross sectional survey data, the same paper found that having a criminal record increased the likelihood of an adult experiencing homelessness in England and Scotland by 3.6 times (Bramley & Fitzpatrick, 2018:108). Similarly, population level analysis using administrative data on homeless shelter users in Denmark has found that the probability of using shelters was greater for those with a history of imprisonment—the odds of shelter use being 6.8 and 4.0 for women and men who had been imprisoned compared to those who had not, respectively (Benjaminsen, 2016).

Overlap and interactions between life events: Sub-groups of multiple exclusion homelessness

Though the studies highlighted so far give an indication of the prevalence and associations of homelessness with adverse life events, of increasing interest amongst academics, policy makers, and practitioners, is how individual experiences overlap within homeless populations. In response, a developing literature has focused on quantifying the overlap of types of disadvantage, and the existence of sub-groups within homeless populations who share similar experiences.

Table 1 summarises sub-groups of people identified in five international studies of homeless populations. We include elements of each study's design, which can come to affect the typologies generated, including: the methodology, the populations included in the study, and a summary of the life experiences/events covered. Studies were found to use either Cluster Analysis or Latent Class Analysis to generate their typologies. Consistent across studies was the inclusion of the experience of mental ill-health and substance misuse—unsurprising given the strong focus on the overlap of these issues in the literature on homelessness. Though the size and exact composition of groups vary, some commonalities emerge in the complexity of the groups identified.

All studies identify a group of PEH with relatively few adverse experiences, or where the experiences were mainly economic rather than social in nature. The 'mainly homeless' group from Fitzpatrick *et al.*'s (2013) study had lower levels of adverse life experiences and were disproportionately likely to be migrants, and hence less likely to be able to access state support. Similarly, Shelton *et al.* (2012) identified a large group with minimal prior adverse experiences, but who were entirely African American and so could expect to have experienced systemic structural discrimination (Watkins, 2017; Weisz & Quinn, 2018). These low adversity groups typically comprise a quarter to a half of the sample suggesting that a large group of people are homelessness due simply to socio-economic factors such as benefits changes, loss of employment, or termination of a tenancy.

Several studies have identified a group with particularly complex needs (Bucher, 2008; Fitzpatrick *et al.*, 2013; Munoz *et al.*, 2005; Shelton *et al.*, 2012). This group often have multiple adverse experiences, and may have more entrenched and complex homelessness. Further, their experiences tend to be among the most difficult to address. The "homelessness, hard drugs and high complexity" group, which made up over a quarter of the Fitzpatrick *et al.* (2013) study, typifies a complex needs group. The presence and extent of a high complexity group, however, varies considerably between studies: this is likely to be a function of both the group sampled from and the focus of these studies. Sosenko *et al.*'s (2020) study provides important insights into gendered patterns of severe and multiple disadvantage. Whilst the study is not included in Table 1 because only a proportion of the sample had experienced homelessness, it found that 70% of people who experienced all four primary forms of exclusion (homelessness, mental ill-heath, being a victim of interpersonal violence and abuse, and substance misuse) were women.

Most studies also include at least one group facing one or more distinct adverse experiences. The exact profile of the groups is again highly dependent upon both the aims of the study and the characteristics of the sample population. However, three groups have consistently emerged. First, multiple studies identify a group who are especially likely to experience mental ill-health; often complex and protracted. In several studies, such as the Shelton *et al.* (2012) study, this group was particularly likely to include women. Interestingly, in the Fitzpatrick *et al.* (2013) study, two

Table 1. Sub-groups identified in literature on the co-occurrence of adverse life experiences within homeless populations.

Study	High adversity	Intermediate adversity	Low adversity
Study: Bucher (2008) **Region:** United States, single urban area **Homeless population:** Street and shelter young homeless, 21 years old or younger **Number of groups:** 4 **Method:** K-means Cluster Analysis **Number of indicators included:** 20 **Broad areas covered:** Abusive experiences; Involvement in sex work; Involvement in criminal activities; Suicidal ideation/ attempts; Living circumstances; Alcohol/marijuana use	**Comprehensive treatment (38%)** High involvement across categories	**Therapeutic housing with an emphasis on addiction (21%)** High rates of emotional/physical abuse; suicidal ideation/attempt; high drug abuse **Therapeutic housing with an emphasis on behaviour management (22%)** High rates of abuse; high involvement of criminal activity; low drug use	**Minimal treatment group (19%)** Low rates of abuse; low suicidal ideation/ attempt; low drug use (except stimulants)
Study: Fitzpatrick *et al.* (2013) **Region:** United Kingdom, 7 urban areas **Homeless population:** Random sample of 'low threshold' services **Number of groups:** 5 **Method:** Two-step Cluster Analysis **Number of indicators included:** 34 **Broad areas covered:** Homelessness; Substance misuse; Institutional care; Street culture activities; Adverse life events; Extreme exclusion/distress	**Homelessness, Mental Health, and Victimization (11%)** Complex needs, particularly mental ill-health, victimization, physical assault, institutional care **Homelessness, Hard Drugs, and High Complexity (26%)** High rates of street drinking, including alcohol and substance misuse, mental ill-health, institutionalization	**Homelessness and Mental Health (26%)** Medium needs, particularly mental ill health, substance misuse, institutional care **Homelessness and Street Drinking** (14%) Highest rates of street drinking and alcohol use; High rates of mental ill-health; Low rates of suicide or self-harm	**Mainly Homeless (23%)** Low needs, fewer experiences of MEH.
Study: Munoz *et al.* (2005) **Region:** Spain, Madrid **Homeless population:** Random sample of people attending soup kitchens and shelters **Number of groups:** 3 **Method:** K-means Cluster Analysis **Number of indicators included:** 13 **Broad areas covered:** Parental mental/ physical disability; Physical/sexual violence (childhood/adulthood); Drug and alcohol use; Suicide attempt; Physical health	**Stressful life events in childhood and alcohol use (20%)** Childhood stressful life events including living away from home, sexual/physical violence, and parental drug/alcohol abuse; Excessive use of alcohol	**Alcohol use and Ill Health (32%)** Deaths of one or both parents; Excessive use of alcohol; Presence of illness, injuries, or accidents	**Economic problems (49%)** Absence of stressful life events; Significant economic problems

Table 1. (Continued).

Study	High adversity	Intermediate adversity	Low adversity
Study: Shelton *et al.* (2012) **Region:** United States **Homeless population:** Sample of young people enrolled at high schools; cluster analysis based on those who had ever experienced homeless **Number of groups:** 4 **Method:** Two-step Cluster Analysis **Number of indicators included:** 29 **Broad areas covered:** Childhood adversity; Socio-economic disadvantage; Mental health problems; Addiction problems; Criminal behaviour and violence, including victim/ perpetrator of violence	**Young offenders (26%)** Childhood adversity along multiple lines, including family conflict, interactions with the police, and socio-economic disadvantage; poor academic achievement; High levels of addiction problems; High levels of criminal behaviour and violence **Abused depressed (27%)** High levels of childhood adversity; High levels of socio-economic disadvantage; High levels of mental health problems; Low levels of criminal behaviour and violence	**Childhood adversity (26%)** Childhood adversity characterised by conflict in family of origin; Low levels of socio-economic disadvantage; Low levels of mental health problems; Low levels of addiction problems; Low levels of criminal behaviours and violence	**Vulnerable African Americans (22%)** Lower levels of physical aggression from parents/ caregiver; Low levels of addiction problems; Low levels of criminal behaviour
Study: Tsai *et al.* (2013) **Region:** United States **Homeless population:** Veterans attending veteran specific programmes **Number of groups:** 4 **Method:** Latent Class Analysis **Number of indicators:** 9 **Broad areas covered:** Chronic homelessness; Incarceration; Socio-economic status; Physical and mental health; Substance use	**Dual Diagnosis (28%)** Highest rates of mental ill-health (including psychotic disorders and hospitalisation) and substance use disorders; high levels of incarceration, unemployment, and medical conditions	**Disabling Medical Problems (10%)** Highest rate of chronic medical conditions and unemployment; High rates of substance use **Poverty- substance abuse-incarceration (40%)** Highest rates of incarceration, low income and substance use; High rates of substance use	**Relatively Few Problems (28%)** Low prevalence across all risk factors, except for low income and military related PTSD

groups with poor mental health were identified, with women more likely to be in the group with relatively less complex mental ill-health. High rates of offending and incarceration, and/or high rates of substance misuse were also combinations of experiences faced by some groups (Munoz *et al.*, 2005); this group often overlapped with the group experiencing mental ill-health, sometimes giving rise to an additional dual diagnosis class (Tsai *et al.*, 2013).

The commonalities in groups identified across different studies are a potential important contribution to our international understanding of MEH and we will return to these in our discussion to consider whether the findings of the current paper align.

Methodology

Data

This paper is based on secondary analysis of a survey of 480 single people experiencing homelessness in Great Britain—England, Scotland, and Wales—conducted in 2014 (Mackie, 2014). Single people were defined as people of adult age without dependent children, or where dependent children were not *currently* living in the household. A sampling frame of local authorities was developed using cluster analysis of administrative data to identify five types of local authorities with similar approaches to statutory homelessness provision for single people. At least three local authorities from each of the five types was selected based on their closeness to the 'average' authority type. The final sample of local authorities (N = 16) included Scotland (n = 2), Wales (n = 3), England (n = 9), and the Greater London area (n = 2), and covered a range of geographies, including local authorities in several metropolitan areas across GB (n = 6).

Within sampled local authorities, participants were recruited from both statutory services and day centres. Recruiting from both service types increases the generalisability of our findings beyond single PEH attending specialised services (e.g. substance misuse services), and therefore already known to be facing multiple forms of exclusion. Due to factors such as the unwillingness of services to participate and low footfall, 29.0% of participants were recruited from statutory services, 71.0% from non-specialist day centres. Our analysis is therefore bias toward people accessing day centres, the implications of which we discuss further in the limitations section.

After removal of cases with missing data on the main variables used in this analysis, the final sample size was 445 people.

Latent class analysis (LCA) as a method for Sub-group analysis

Latent Class Analysis (LCA) is a statistical technique for identifying groups, or 'classes', using categorical data (McCutcheon, 1987). The premise behind LCA is that there are unobserved or 'latent' classes that lead to observed patterns within a data set. In our analysis the assumed latent classes were sub-groups of single people experiencing MEH. An alternative approach to grouping individuals would have been to adopt Cluster Analysis (CA). A benefit of using LCA over general CA approaches is that it is model based. LCA assumes a statistical model relating to the population from which the sampled data were gathered (Vermunt & Magidson, 2002). CA does not make this assumption, but instead splits observations (people) so that the difference between them in terms of a set of variables—measured through a distance metric—is minimised (Everett, 2011). Consequently, LCA comes with a range of statistical measures of how well the model fits the data, whereas the quality of CA is assessed in terms of how well a cluster solution maximises between group differences and minimises within group differences in terms of the distance metric chosen.

Table 2. Prevalence of adverse experiences used in sub-group analysis.

	n (%)
Mental ill health	217 (48.8%)
Drug dependency	215 (48.3%)
Alcohol dependency	209 (47.0%)
Served a prison sentence	186 (41.8%)
Self-harmed	123 (27.6%)
Exclusion or suspension from school	123 (27.6%)
Been in local authority care	110 (24.7%)
Violence/abuse other family member/friend	106 (23.8%)
Violence/abuse partner	92 (20.7%)
Total N	445

Indicators of MEH used in LCA

Our study conducted LCA using binary indicators for different adverse life experiences. Survey participants were originally asked to state (Yes/No), from a list of 15 possible life experiences, which they had faced. The binary indicator was set to 1 if the person had that experience, and 0 otherwise. Nine experiences have been included in our sub-group analysis and are summarised in Table 2. These experiences were chosen as they conform largely to those used in the MEH and severe disadvantage literature as relating to either institutional care, substance use issues, and early or adult trauma (Fitzpatrick *et al.*, 2013). Experiences include: (1) alcohol dependency, (2) drug dependency, (3) mental ill health, (4) self harming, (5) violence/abuse from a partner, (6) violence/abuse from other family members or friends, (7) served a prison sentence, (8) been in local authority care, or (9) exclusion or suspension from school.

LCA models containing 2 to 6-classes were run. Each model was assessed based on a balance between interpretability and statistical model fit. In terms of assessing model fit through statistical approaches, we drew on: (1) a range of Information Criteria (IC), (2) specific analyses that compare between models with different numbers of classes to determine statistically significant changes in model fit, and (3) the accuracy of models in classifying people as belonging to different classes. The interpretability of the models was assessed by examining 'item probabilities', to determine whether the resultant classes in each model were distinct in some way. The following sections outline in more detail each of the aspects considered when exploring the suitability of different latent class models.

Assessing model fit

The Akaike information criteria (AIC), Bayesian information criterion (BIC), sample-adjusted Akaike information criteria (AICc), and sample-adjusted Bayesian information criterion (aBIC) were used to measure the overall fit of models to data. They enable models to be compared to one another, with lower values indicative of better latent class models. Simulation studies of IC measures have shown that each is susceptible to different aspects of the data, such as unequal class size or sample size (Nylund *et al.*, 2007). The AICc and aBIC adjust the information criteria to account for sample size, with the AICc performing better than AIC with small samples (Brewer *et al.*, 2016). Drawing on multiple IC therefore reduced the likelihood that a class model was chosen based on a single, potentially biased measure.

In addition to the four IC measures, we use the ad-hoc adjusted Lo-Mendell-Rubin likelihood ratio test (aLMR-LRT) to test the hypothesis that a class (k) leads to statistically significant improvement over a class model with k − 1 classes. The aLMR-LRT is assessed based on the usual methods for assessing p-values, i.e., a threshold of either 0.05 or 0.1 depending on how conservative the analyst wishes to be. A significant p-value, in this case $p > 0.05$, leads to a rejection of the null hypothesis of k − 1 classes (Nylund-Gibson & Choi 2018; Nylund *et al.*, 2007). aLMR-LRT values comparing k − 1 (null hypothesis) vs k (alternative hypothesis) models were calculated using the programme calc_lrt, part of the tidyLPA package in r (Rosenberg *et al.*, 2018).

Along similar lines to aLMR-LRT's comparison of different models, we also calculated the Bayes Factor (BF_{01}) values to compare evidence that we should select a model with number of classes k over one containing one more class (k + 1). The benefit of the BF_{01} over model selection tests based on p-values—such as aLMR-LRT—is that it provides relative evidence for which hypothesis should be chosen, in this case which model selection option has stronger evidence—k or k + 1. BF can be approximated using the BIC values and was calculated by the research team using the following equation from Jarosz & Wiley (2014:3):

$$BF_{01} = \exp((BIC_1 - BIC_0)/2) \qquad (1)$$

BIC_0 relates to the BIC value from a model of classes k, whilst BIC_1 relates to the BIC from a model of classes k + 1. In our analysis, a value of $BF_{01} > 1$ provides evidence that the k class model should be chosen over the k + 1 model, whilst values $BF_{01} < 1$ support the model with k + 1 classes over that with k classes—where $BF_{01} = 1$ indicates there is no evidence either way (Jarosz and Wiley 2014).

Assessing model accuracy using average posterior probabilities

As LCA is model based it generates probabilities of the likelihood that a person belongs to a class—known as posterior probabilities. Rather than considering people as belonging solely to one sub-group as is the case with CA, a person can be allocated membership to classes in proportion to the probability of being in each class. People are assigned to a single class for the purposes of sub-group analysis, based on the class in which they have the highest posterior probability. However, by looking at the average posterior probabilities for people assigned to a class, we can gain insight into the degree of certainty with which people belong to that class. Though this information is not sufficient on its own to decide on a suitable model, it was used to judge the accuracy of models. Average posterior probability values of greater than 0.70, or 70%, indicate adequate class assignment accuracy (Nagin, 2005). Furthermore, higher average posterior probabilities are preferable to a class solution where accuracy is sacrificed for increasing complexity.

Exploring the interpretability of latent classes using item probabilities

Item probabilities are produced for each MEH experience (m) in each class (k) to give an indication of the likelihood of someone belonging to that latent class reporting that MEH experience ($\omega_{m|k}$). Item probabilities can be used to examine the aspects of classes that make them distinct and therefore interpretable, known as homogeneity and separation of latent class solutions (Masyn, 2013). Class homogeneity relates to those aspects that bind a latent class together, as being those experiences which are characteristics of that class. High class homogeneity is indicated by strong class association with an MEH experience, as either having a high or low item probability for that experience for that class, i.e., people being very likely or very unlikely to have an MEH experience would be characteristic of people in that class. Where $\omega_{m|k} > 0.7$ there is a high degree of commonality with that experience; alternatively, where $\omega_{m|k} < 0.3$. then there is low commonality. Class separation relates to the extent to which item response probabilities distinguish *between* sub-groups. For example, if $\omega_{m|k} > 0.7$ for serving a prison sentence in all classes, then having served a prison sentence does not separate the classes well.

Describing the final latent class model

Additional variables were used to explore the characteristics of people in each of the latent classes. Age was calculated from the mid-point of 2014 when the survey was conducted (1st July 2014). Nationality was recoded as British (85.8%) and non-British (14.2%) to preserve statistical power. Participants were asked how many times they had previously been homeless. As responses ranged from the exact, i.e., homeless once, to the hyperbole, i.e., 100 or more times, the number of times homeless was recoded into a 5-category scale from 1 to 5+ times homeless. In addition to the number of times homeless, respondents were asked what age they first became homeless. However, as there may be a degree of imprecision in recalling the exact age, which may lead to biased averages, we have recoded this variable into youth homeless (<=24 years old), and 'adult' homeless (>24 years old), based on age ranges used in UK policy definitions of youth homelessness (Johnsen *et al.*, 2005). Finally, to summarise the overall prevalence of experiences, a sum of total possible experiences was generated, ranging from 0 to 15 experiences (Mean = 4.4). A summary of recoded variables and other variables used to describe the final sample are provided in Table 3.

Crosstabulation combined with Chi square tests of significance were used to explore associations between latent class membership and categorical variables. Fisher's exact test were run where expected cell counts in crosstabulations were below 5. To explore differences in interval data by latent class membership (i.e., age and count of total experiences) Welch's ANOVA are reported as the equality of variance assumption was violated. On its own, violations of equal variance are not problematic, however, this was combined with the unequal size of groups, which may have led to increased chances of finding associations where there were none. To explore between group differences, Games-Howell post hoc tests were run, with

Table 3. Characteristics of final sample.

		n (% or S.D.)
Male		371 (83.4%)
Female		74 (16.6%)
Non-British national identity		63 (14.2%)
British		382 (85.8%)
Age, mean (± S.D.)		35.6 (±11.1)
Young person when first homeless		257 (57.8%)
Adult when first homeless		188 (42.2%)
Number of times homeless:	1	118 (26.5%)
	2	79 (17.8%)
	3	58 (13.0%)
	4	34 (7.6%)
	5+	156 (35.1%)
Homelessness status, previous night:	Roofless	154 (34.6%)
	Houseless	182 (40.9%)
	Insecure	70 (15.7%)
	Inadequate	21 (4.7%)
	Housed	17 (3.8%)
	Other (not specified)	1 (0.2%)
Total number of adverse experiences, mean (±S.D.)		4.4 (±2.9)
Recruited from council offices		129 (29.0%)
Recruited from day centres		316 (71.0%)
Total N		445

this being appropriate under unequal variances (Rusticus & Lovato, 2014). Fisher's exact test, Welch ANOVA and Games-Howell tests were conducted in SPSS.

A typology of multiple exclusion amongst single people experiencing homelessness

Based on the statistical fit indices, average posterior probabilities, and other model assessment criteria produced for models for 2 up to 6-classes (Table 4), a 4-class solution was chosen. The information criteria suggest that between 3 and 5-class models could be considered, with AIC suggesting 5-classes (AIC = 4569.95), BIC suggesting 3-classes (BIC = 4718.00), and the sample-size adjusted BIC and AIC both suggesting 4-classes (aBIC = 4610.03; AICc = 4581.49). The aLMR-LRT showed significant p-values for the 2 to 5-class solution, with the 6-class solution being on the edge of the 5% significance threshold ($p = 0.046$). The Bayes Factor (BF) was greater than 10, and therefore showed significant evidence for models with k classes over k + 1 classes, in the 3 vs 4, and 4 vs 5 class comparisons. The BF therefore favoured lower class solutions over adding more classes. BF was less than 1 ($1/3 < BF < 1$) in the 2 vs 3-class comparison, and though this may suggest that evidence favours 3 to 2-classes, it was within the boundary condition suggested by Jarosz and Wiley (2014) as lacking strong evidence to support that conclusion.

Examination of average posterior probabilities indicated that the 3-class solution had marginally higher average probabilities that a person belonged to a single class (>80%) than the 4-class solution. The 5-class solution sacrificed accuracy for complexity, when compared a model with 4-classes, and was only supported by the AIC amongst the information criteria used—with AIC being shown to overestimate the number of classes (Nylund *et al.*, 2007). Additional analysis of the item probabilities indicated that from the 5-class solution onwards there were increasing instances of 'boundary parameter estimates'—being instances where the item response probabilities were either 0 or 1, indicating perfect prediction/reliability of that indicator which is unlikely in practice (Wurpts and Geiser, 2014). As an example, item probabilities from the 5-class model are presented in Table 4 and show perfect high commonality ($\omega_{m|k}$ = 1.000) for Class-1 on both mental ill health and serving a prison sentence, whilst Class-5 had perfect low commonality ($\omega_{m|k}$ = 0.000) for drug dependency. As a result of this exploration of the data, a 5-class solution was not considered further. As can also be seen in Table 5, a 3-class model resulted in only one class where there was high commonality, Class-1, with Class-2 and 3 lacking any item probabilities over 0.7. The 4-class model did however have groups that had high commonality for most of its classes, and also provided greater insight into the complexity of MEH than the 3-class model.

Having chosen the 4-class model as optimal for our purposes, the item response probabilities in Table 4 are plotted in Figure 1 to enable easier interpretation in terms of high and low commonality. Probabilities are expressed as a fraction of 1. For example, 0.937 or 93.7% of people in Class-1 would report that they had experienced mental ill health. The shaded area of the graph indicates the region where $0.3 < \omega_{m|k} < 0.7$, and therefore lacking commonality, i.e., an experience was *not* strongly characteristic of a class either by its presence or apparent absence. Our 4-class solution can be divided into those classes which had high commonality on a limited number of MEH experiences (Class-1 & 2), and those that were distinguishable by consistently high or low commonality across all MEH experiences (Class-3 & 4).

Of the former type, Class-1 (at 17% of sample) was distinguished by the high likelihood of class members reporting mental health issues and self-harm, at 78% and 70% respectively. Class-2 (31% of sample) was marked by the high likelihood of its members reporting having served a prison sentence and having drug dependencies, 82.1% and 71.0% respectively. Both Class-1 and 2 had a similar mean number of experiences, 5.3 and 5.1 respectively, with post hoc tests confirming they were not significantly different from one another (Table 6). Due to their high commonality with particular MEH experiences, Class-1 and 2 are known as 'mental health' and 'prison-drugs' groups, respectively.

In contrast to those classes with homogeneity on specific MEH experiences, Class-3 (41%) was characterised by the relative low likelihood of reporting any MEH experiences, whilst reporting on average 2.0 experiences—for these reasons they are referred to as the 'low exclusion' group. At the other end of the prevalence spectrum, Class-4 (11% of the sample) was distinguished by the high likelihood of reporting almost all MEH experiences—for which they are known as the 'high exclusion' group. The likelihood of members of this 'high exclusion' group reporting school exclusion (95.8%), local authority care (74.6%), and other violence/abuse (91.5%) were indicators that clearly separate this group from all others. For example, in the case of school exclusion, the 95.8% likelihood in the 'high exclusion' group compares starkly to the other groups where probabilities ranged from 8.2% ('low exclusion') to 29.3% ('mental health').

In terms of the characteristics of people belonging to each of the 4-classes, there were significant associations with latent class membership and gender, nationality,

Table 4. Summary of indicators used to assess different LCA models (2 to 6-class model).

		2-class	3-class	4-class	5-class	6-class
Model information	Log likelihood	−2301.501	−2270.580	−2247.986	−2235.976	−2226.164
	Estimated parameters	19	29	39	49	59
Fit indices	AIC	4641.00	4599.16	4573.97	**4569.95**	4570.33
	AICc	4642.70	4603.22	**4581.49**	4582.11	4588.41
	BIC	4718.87	**4718.00**	4733.80	4770.76	4812.12
	aBIC	4658.57	4625.97	**4610.03**	4615.25	4624.87
	aLMR-LRT	**$p < 0.001$**	**$p < 0.001$**	**$p < 0.001$**	**$p = 0.012$**	$p = 0.046$
	Bayes Factor	$1/3 < BF_{01} < 1$	**$BF_{01} > 10$**	**$BF_{01} > 10$**	**$BF_{01} > 10$**	**$BF_{01} > 10$**
Proportion in each class		31% (n = 139)	13% (n = 59)	17% (n = 76)	11% (n = 49)	21% (n = 93)
		69% (n = 306)	52% (n = 230)	31% (n = 136)	19% (n = 84)	11% (n = 49)
			35% (n = 156)	41% (n = 184)	11% (n = 50)	19% (n = 84)
				11% (n = 49)	30% (n = 135)	4% (n = 19)
					29% (n = 127)	12% (n = 52)
						33% (n = 148)
Average posterior probability		88%	89%	78%	73%	83%
		93%	87%	80%	80%	86%
			81%	86%	87%	87%
				86%	87%	77%
					77%	79%
						83%

Table 5. Item probabilities for LCA models with 3 to 5-classes.

		Mental ill health	Self-harmed	Alcohol dependency	Drug dependency	Other violence/ abuse	Partner violence/abuse	Local authority care	Prison sentence	School exclusion
3-class model:	1	**0.952**	**0.776**	0.675	**0.776**	**0.843**	0.662	0.623	**0.720**	**0.832**
	2	0.489	0.280	0.534	0.642	0.181	0.154	0.271	0.558	0.262
	3	0.287	0.056	0.279	0.104	0.071	0.096	0.048	0.065	0.061
4-class model:	1	**0.777**	**0.701**	0.449	0.523	0.402	0.344	0.179	0.204	0.293
	2	0.463	0.181	0.590	**0.710**	0.139	0.133	0.344	**0.821**	0.285
	3	0.249	0.024	0.326	0.207	0.058	0.076	0.074	0.093	0.082
	4	**0.937**	**0.738**	**0.702**	**0.799**	**0.915**	0.667	**0.746**	**0.866**	**0.958**
5-class model:	1	**1.000**	0.361	0.674	**0.898**	0.089	0.181	0.408	**1.000**	0.281
	2	**0.774**	0.648	0.453	0.528	0.378	0.337	0.164	0.226	0.279
	3	**0.905**	**0.703**	0.687	**0.786**	**0.955**	0.650	**0.742**	**0.856**	**0.964**
	4	0.160	0.072	0.505	0.567	0.087	0.072	0.247	0.508	0.218
	5	0.312	0.008	0.246	0.000	0.070	0.097	0.030	0.014	0.044

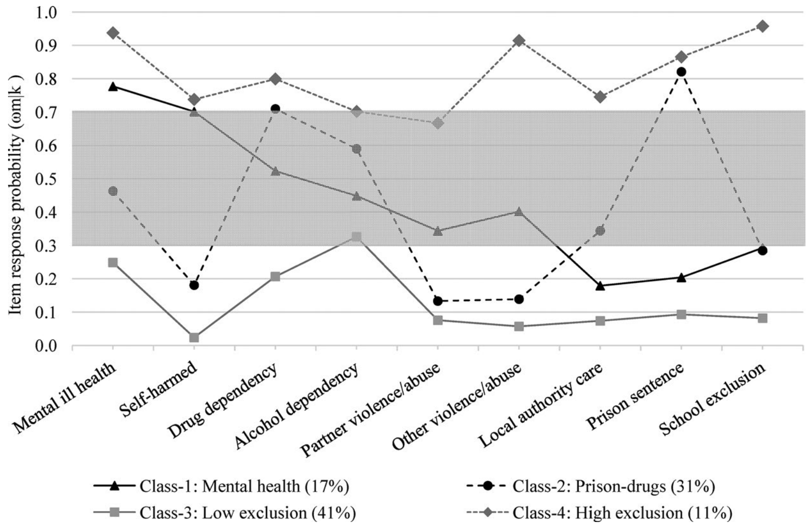

Figure 1. Plot of item probabilities for 4-class solution; shaded area $0.3 < \omega m|k < 0.7$ indicates that an experience is not strongly characteristic of a particular class.

and age when first homeless (Table 6). The effect size for gender and age at first homeless episode was small to medium, Cramer's *V* being 0.2527 and 0.2955 respectively, whilst there was a medium effect size between latent class membership and nationality ($V = 0.3553$). The 'mental health' and 'high exclusion' groups had a high proportion of class members who were female, 32.9% and 28.6% compared to the sample proportion of 16.6%. The high proportion of male respondents (91.9%) in the 'prison-drugs' group may reflect the gendered nature of the prison experience indicator, as male prisoners make up roughly 95% of the prison population (Ministry of Justice, 2020).

For age when first homeless, it was the 'high exclusion' group that showed the starkest difference, with people in this group being predominantly young (<=24 years old) when first homeless (85.7%). The group with the second largest proportion of people who were first homeless when young was the 'mental health' group.

People of nationalities other than British were over-represented in the 'low exclusion' group (Class-3)—28.8% compared to 14.2%—and under-represented in all other classes. Cross tabulations (not shown) of nationality by the MEH experiences included in the LCA indicated that those of a non-British nationality were less likely to report all the experiences compared to British nationals. This finding reflects, to some extent, those of Fitzpatrick *et al.*'s (2012) analysis of migrant's experiences of MEH. In their study, migrants were generally found to have lower prevalence of the MEH experiences asked about when compared to non-migrants.

Fisher's exact test of association indicated that there was a significant association between latent class membership and number of times homeless. As would be anticipated for those facing 'low exclusion', and therefore less 'complex' homelessness, Class-3 had the highest proportion of people who experienced homelessness only once, 42.9% compared to 26.5% for the sample. Similarly, the 'high-exclusion' group

Table 6. Class characteristics (% and means) and tests of association/distribution.

		Class-1 (Mental health)	Class-2 (Prison-drugs)	Class-3 (Low exclusion)	Class-4 (High exclusion)	Total	p-value	Test of association/distribution
Gender[a]	Male	67.1	91.9	87.0	71.4	83.4	$p < 0.001$	$\chi 2 = 28.4062$, $V = 0.2527$
	Female	32.9	8.1	13.0	28.6	16.6		
Nationality[a]	Other nationality	3.9	5.1	28.8	0.0	14.2	$p < 0.001$	$\chi 2 = 56.1665$, $V = 0.3553$
	British	96.1	94.9	71.2	100.0	85.8		
Age first homeless[a]	Young person	69.7	61.8	42.4	85.7	57.8	$p < 0.001$	$\chi 2 = 38.8680$, $V = 0.2955$
	'Adult'	30.3	38.2	57.6	14.3	42.2		
Number of times homeless[b]	1	19.7	15.4	42.9	6.1	26.5	$p < 0.001$	–
	2	26.3	14.0	19.0	10.2	17.8		
	3	13.2	13.2	11.4	18.4	13.0		
	4	13.2	5.9	7.6	4.1	7.6		
	5+	27.6	51.5	19.0	61.2	35.1		
Mean age[c]		32.4	38.1	35.8	32.6	35.6	$p < 0.001$	$F_{3,168} = 5.8117$, sig. differences: 1 vs 2; 2 vs 4
Mean number of experiences[c]		5.3	5.1	2.0	9.9	4.4	$p < 0.001$	$F_{3,148} = 306.6824$, sig. differences: 1 vs 3; 1 vs 4; 2 vs 3; 2 vs 4; 2 vs 4; 3 vs 4
Total (%)		76 (17%)	136 (31%)	184 (41%)	49 (11%)	445(100%)		

a. Chi-square test of association. Cramer's *V* gives an indication of effect size. With 1 df, effect size *V*: 0.1 = small, 0.3 medium, 0.5 = large.
b. Fisher's exact test due to expected cell counts less than 5. No test statistics are generated.
c. Welch ANOVA due to unequal variances and sample size. Games-Howell post hoc test used to explore significant differences between classes.

(Class-4) had the highest proportion of people experiencing 5 or more episodes of homelessness, 61.2% compared to 35.1% for the sample. However, the second highest group to experience 5 or more homeless episodes were those in the 'prison-drugs' group (Class-2), at 51.5%.).

Responding to our second research question, these findings show four common groupings of MEH amongst people experiencing homelessness in Great Britain. The next section briefly discusses the extent to which this new four-class typology aligns with different international contexts and responds to the final research question by considering the main policy implications.

Policy implications of a multiple exclusion homelessness typology

The study findings are consistent with the common groupings identified in our analysis of international evidence on MEH. Whilst the size and exact composition of groups vary between studies, including the current study, we similarly identified a high exclusion group (Class-4), a low exclusion group (Class-3) and then two groups characterised by high prevalence of particular adversities – mental health/ self-harm (Class-1) and prison/drug dependency (Class-2). Although the international evidence base is limited to a small number of studies from the US and Europe, we can begin to have confidence in the applicability of these common groupings to different international contexts, which in turn has implications for policy and practice in GB and elsewhere in the global north. Five specific policy and practice implications emerge from this analysis.

First, if highest levels of adversity amongst PEH are to be avoided, policy and action must move further upstream. In the 'high exclusion' group (Class-4) there were indications of childhood adversity, including the highest likelihood of reporting school exclusion (95.8 per cent) and local authority care (74.6 per cent), and becoming homeless at an early age. Though our data do not enable an analysis of the timing of events, it may suggest that those who faced adverse events in childhood also experienced high levels of other adversities later in life. Similar conclusions were reached by Shelton *et al.* (2012) in the United States and Munoz et al (2005) in Spain, where high adversity groups faced considerable childhood trauma. These findings support growing international calls for earlier, targeted interventions with young people (Schwan *et al.*, 2019). However, the need to invest in upstream childhood interventions, whilst continuing to support the crisis homelessness response with people experiencing high adversity, is being met with some resistance, particularly in the North American context;

> 'It is often the case that the 'politics of scarcity' underlies the resistance to go in this direction, often on the basis that broadening the homelessness mandate to include prevention would draw much needed resources away from providing services and supports to those who are currently homeless and who have high needs.' (Gaetz & Dej, 2017: 25)

Second, the study found that roughly 1 in 10 single people experiencing homelessness in GB face high likelihood of reporting almost all MEH experiences (Class-4 High exclusion). Whilst direct comparisons between studies are difficult due to the different sampling and analytical approaches of the studies, and the slightly different study populations, it seems the high exclusion group constituted a greater proportion of the sample in all other MEH studies, including 20% in Spain (Munoz *et al.*, 2005) and 28% in the United States (Tsai *et al.*, 2013). These differences are likely to be at least partly impacted by the social welfare contexts of the respective countries. Yet, the common challenge across the North American and European countries where MEH has been explored, is the limited availability of interventions that effectively meet the needs of this population subgroup. The 'international embrace' of Housing First (Byrne *et al.*, 2021: 1), including in all GB nations, is a positive policy shift and has the potential to meet the needs of these individuals effectively. Housing First primarily targets people who have faced multiple adversities and focuses on providing immediate unconditional access to settled accommodation paired with supportive services. Yet, widespread implementation of Housing First has been slow to materialise and Housing First remains far from the default response. A particular barrier to scaling up of Housing First in England and Wales is the absence of a requirement to accommodate most single homeless households due to their lack of Priority Need status – this barrier was removed in Scotland and is currently under review in Wales. It is also worth noting that whilst the positive impacts of Housing First on housing stability are well evidenced, the impacts on wider support needs such as substance misuse are less definitive (Baxter *et al.*, 2019), highlighting the need for further policy and practice innovation and re-emphasising the need to move interventions upstream.

Third, the existence of the prison-drugs group (Class-2), which constituted nearly a third of the GB sample, and an even higher proportion (40%) of people experiencing MEH in the United States (Tsai *et al.*, 2013), necessitates the disruption of the nexus of prisons, drug dependencies and homelessness. In the United States, analysis of patterns and correlates of homelessness amongst male prisoners following release found that mental health and substance use issues were vulnerabilities that increased the chances of homelessness post-release (Remster, 2021). Across GB the three nations have introduced protocols, guidance or standards that aim to prevent homelessness on discharge from prison but there is limited evidence of meaningful impact (Madoc-Jones *et al.*, 2018). Greater policy and practice impetus is required, and this may include investment in interventions such as Critical Time Interventions - time-limited support for those who are vulnerable to homelessness during periods of transition – which have proven effective, albeit implemented on a small-scale, in North America and in the UK in the context of other institutional transitions (de Vet *et al.*, 2013; Herman *et al.*, 2007; Sheikh & Teeman, 2018).

Fourth, the low exclusion group (Class-3) – 41% of the GB sample – primarily require swift access to settled accommodation and an income to sustain their home. With a relatively low number of adversities (mean 2.0), there are likely to be fewer requirements for wider support amongst this group. Notably, in GB people in this group are more likely to be a nationality other than British (28.8% compared to 14.2% for the sample), a pattern likely to be explained by their limited access to state support. This low exclusion group was also identified in all other MEH studies, ranging from 19% of the sample in one US study (Bucher, 2008) to 49% in Spain (Munoz *et al.*, 2005). Housing-led responses such as Rapid Rehousing, which rehouses people as quickly as possible after the onset of homelessness (Culhane *et al.*, 2011), are particularly well-suited to the needs of this population. Rapid Rehousing has gained considerable momentum, particularly in the United States (Byrne *et al.*, 2021) and increasingly in GB, where both Scottish and Welsh Governments have recently introduced Rapid Rehousing as a policy priority. Whilst this is likely to impact positively, it is again important to recognise that earlier, universal interventions to reduce poverty through effective employment and social welfare policy, and interventions to ensure a sufficient supply of affordable housing, would more effectively prevent homelessness amongst this group.

Finally, services need to recognise homeless women face particular forms of MEH. When compared to the sample population (16.6% women), women were overrepresented in the high exclusion group (Class-4) – 28.6%, and the mental ill-health group (Class-1) – 32.9%. This echoes the work of Sosenko *et al.* (2020) who found 70% of people experiencing four main forms of exclusion (homelessness, mental ill-heath, being a victim of interpersonal violence and abuse, and substance misuse) were women. Similarly, Shelton *et al.* (2012) concluded that young women were over-represented in the mental ill-health group in their US study. It is well known to service providers that homeless women are more likely to face traumas such as domestic abuse (Bretherton, 2017) and women-only services are fairly commonplace. However, an absence of reliable data on the prevalence of women forced to sleep on the streets (Bretherton & Pleace, 2018), compounded by prescriptive and reductive expectations of those who have experienced domestic abuse, is associated with a shortage of appropriate services for women with complex needs which can increase the risk of long term homelessness (Cramer, 2005; Mayock *et al.*, 2016; Bretherton, 2017). There appear to be few governments acting effectively in this area, however in their updated Homelessness Action Plan in October 2020, Scottish Government were unique in recognising the particular forms of MEH experienced by women; this offers some hope for well-informed future intervention in this area (Scottish Government, 2020).

Study limitations

Our research is largely limited by its use of secondary analysis of survey data which were collected for a different research purpose. Analysis of where respondents stayed the night prior to interview indicates that our sample relates predominantly to people who were ‘roofless’ (34.6%), e.g., street homeless and those in emergency shelters, and those who were houseless (40.9%), e.g., people in temporary accommodation and those in institutions such as prisons or A&E (see Table 3), using the European typology of homelessness and housing exclusion (FEANSTA, 2004). Our sample therefore relates to people experiencing the more extreme end of the homeless-housing exclusion spectrum.

Recruitment for the survey was bias towards people approaching day centres, with most of the sample originating from these sites (71.0%). Day centres are often associated with placing low demands on their users, meaning that they attract those who would not necessarily be found in statutory services. However, some marginalised groups may be under-represented in a sample dominated by ‘low threshold’ services, for example with both women and LGBTQ people reporting avoidance of these services due to harassment and exclusion (Abramovich, 2017; Casey *et al.*, 2008, England, 2021). There are also limitations in sampling from homelessness services specifically, given that not all PEH access services.

In addition to limitations due to the secondary nature of the data, design factors may affect the LCA. Several simulation studies conducted of LCA have shown that sample size and the number of indicators included can impact on the quality of LCA (Swanson *et al.*, 2012; Wurpts & Geiser, 2014; Yang, 2006). A consistent finding across these simulation studies is that once sample sizes reach roughly 500 sampling units (i.e., people), then information criteria begin to perform consistently. Furthermore, using more indicator variables can overcome issues with small sample sizes, with LCA designs being recommended to avoid having fewer than 5 indicators (Wurpts & Geiser, 2014). We are therefore confident that potential design issues with the LCA are limited because of the relatively large sample and number of indicators included.

A final limitation of our analysis may stem from the types of indicators we include in the LCA, which exclude structural factors, primarily poverty, given its links to homelessness in the UK (Bramley & Fitzpatrick, 2018). A 'significant period of unemployment during adult life' was included in the original survey as an adverse life event, and was experienced by 65.4% of the sample. The ubiquity of unemployment may stem from the fact that the sample represented people at the more extreme end of the homelessness-housing exclusion scale (FEANSTA 2004)—as discussed above. Given that poverty, generally, and unemployment, specifically, are not included in either the definition of MEH or severe disadvantage, and it was highly prevalent—leading to poor latent class separation—we chose not to include it in the final LCA model.

Conclusion

This paper advances our understanding of MEH by adding to the sparse quantitative evidence base in Great Britain. Responding to our first research question, the study confirms the presence of recurring combinations of adversity amongst people experiencing homelessness in different international contexts. Most studies include a high exclusion group, low exclusion group, and at least one group facing one or more distinct adverse experiences, particularly mental ill-health, offending, and/or high rates of substance misuse. Our new Latent Class Analysis of GB data further confirms these conclusions, discovering high and low exclusion groups, and two further groups; one characterised by high prevalence of mental health/self-harm and the other by prison/drug dependency.

The third and final research question centres on the potential policy implications emerging from an advanced understanding of MEH in Great Britain. The paper identifies five main implications. First, if highest levels of adversity amongst PEH are to be avoided, policy and action must intervene earlier, including in childhood. Second, the needs of people reporting highest levels of adversity (roughly 1 in 10 single people experiencing homelessness in GB) are not well met. Effective interventions such as Housing First must be more widely available and further service development and innovation targeted at this group is necessary. Third, greater policy and practice impetus is required to disrupt the enduring nexus of prisons, drug dependencies and homelessness and this may include investment in approaches such as Critical Time Interventions. Fourth, housing-led responses such as Rapid Rehousing would help address the housing needs of the large proportion of people experiencing homelessness who face relatively few adversities; moreover earlier preventative actions to address structural drivers of homelessness such a poverty and unaffordable housing markets would prevent the occurrence of homelessness in the first instance for these individuals. Finally, in order to meet the needs of women who face particular forms of MEH, it is essential to address the shortage of appropriate services for women with complex support needs.

The emergent policy and practice implications of this analysis demonstrate the value of scrutinising homelessness policy and practice through a lens of MEH. Whilst this study situates the GB experience in a wider international context and identifies recurrent combinations of adverse experiences amongst people experiencing homelessness, future research might usefully be designed to compare adverse experiences by adopting consistent, comparable methodologies and sampling; this may help to unearth some of the key structural drivers influencing forms of MEH across different national contexts.

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ORCID

Edith England http://orcid.org/0000-0001-9894-8323
Ian Thomas http://orcid.org/0000-0001-9808-0202
Peter Mackie http://orcid.org/0000-0003-1494-0864

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